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Title Dynamic wireless resource utilization

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Abstract In one embodiment, a method for dynamic wireless resource utilization includes monitoring a wireless communication resource; generating wireless communication resource data; using the wireless communication resource data, predicting the occurrence of one or more holes in a future time period; generating hole prediction data; using the hole prediction data, synthesizing one or more wireless communication channels from the one or more predicted holes; generating channel synthesis data; receiving data reflecting feedback from a previous wireless communication attempt and data reflecting a network

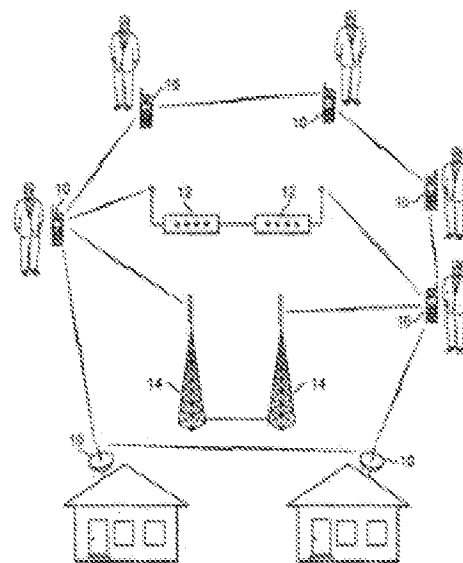


FIG. 1

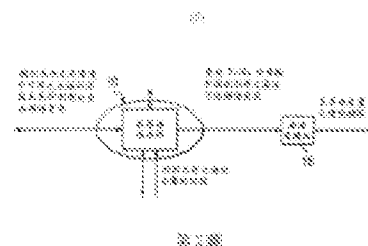


FIG. 2



FIG. 3

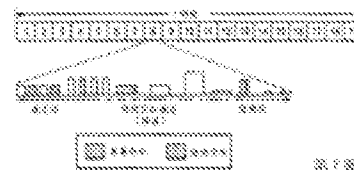


FIG. 4

FIG. 5

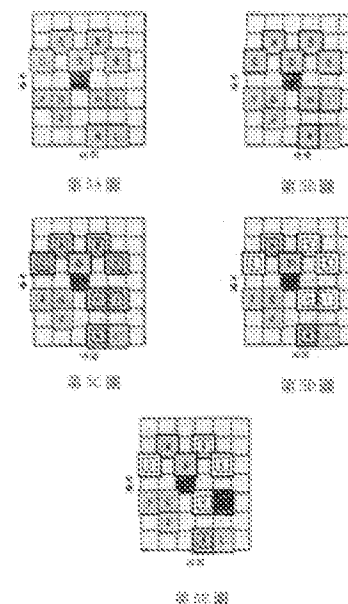
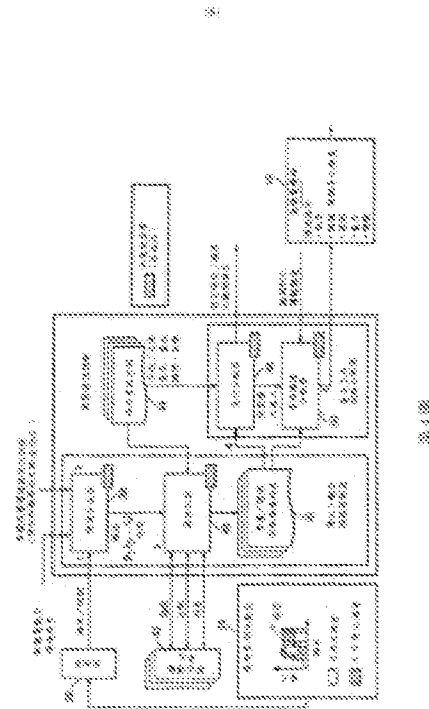
condition; according to the received data and the channel synthesis data, selecting a particular wireless communication channel from the one or more synthesized wireless communication channels; generating wireless communication channel selection data; using the wireless communication channel selection data, instructing a radio unit to communicate using the selected wireless communication channel; and instructing the radio unit to discontinue use of the selected wireless communication channel after the communication has been completed.

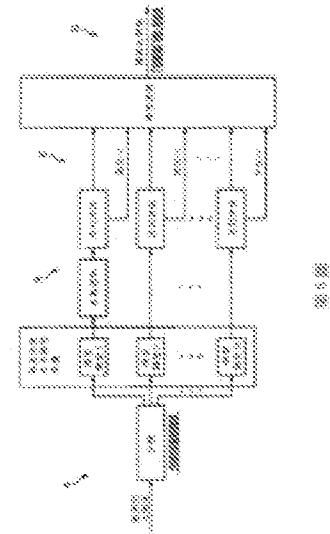
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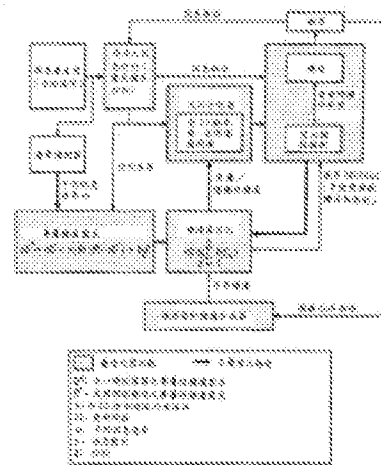
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The diagram illustrates a fuzzy inference system for breast cancer classification. It starts with input variables: Age, Nodule, Calcification, Shape, Marginal, Specificity, and Ultrasound. These inputs are processed through a series of fuzzy rules (R1 to R10) to produce a final classification output, which is a fuzzy set representing the likelihood of being Benign or Malignant.

Legend:

- $\mu_{\text{Age}}(x)$
- $\mu_{\text{Nodule}}(x)$
- $\mu_{\text{Calcification}}(x)$
- $\mu_{\text{Shape}}(x)$
- $\mu_{\text{Marginal}}(x)$
- $\mu_{\text{Specificity}}(x)$
- $\mu_{\text{Ultrasound}}(x)$

Fuzzy Rules:

- R1: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R2: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R3: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R4: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R5: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R6: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R7: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R8: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R9: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$
- R10: $\mu_{\text{Age}}(x) \wedge \mu_{\text{Nodule}}(x) \wedge \mu_{\text{Calcification}}(x) \wedge \mu_{\text{Shape}}(x) \wedge \mu_{\text{Marginal}}(x) \wedge \mu_{\text{Specificity}}(x) \wedge \mu_{\text{Ultrasound}}(x)$

Final Output:

The final output is a fuzzy set representing the classification result, which is a combination of Benign and Malignant classes.

[illegible]

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graph TD
    A[1. 患者主诉及体征  
1. Patient's main complaint and signs] --> B[2. 采集病史  
2. Collect history]
    B --> C[3. 采集心电图  
3. Collect ECG]
    C --> D[3.1 心电图正常  
3.1 ECG normal]
    C --> E[3.2 心电图异常  
3.2 ECG abnormal]
    D --> F[4. 心电图正常  
4. ECG normal]
    E --> G[6. 心电图异常  
6. ECG abnormal]
    F --> H[5. 心电图正常  
5. ECG normal]
    G --> I[7. 心电图异常  
7. ECG abnormal]
    H --> J[8. 心电图异常  
8. ECG abnormal]
    I --> J
  
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[illegible]